

a submarginal band of white; hind margin pale, bordered with dark brown on its inner edge. Posterior wings bright orange-ochreous, crossed before the middle by a cream-coloured band bordered with deep brown; basal half to just below the cell violaceous, crossed before the middle of the cell by an orange band extending along the front margin to the cream-coloured transverse band, and from the front margin to the median nervure; a second orange band beyond it, and touching the cream-coloured band, bounded on both sides by the cell; a pale blue band extending from just above the anal angle along the outer edge of the central band to the first median nervule, where it becomes suffused with dusky, and continues up to the anterior margin; hind margin edged with a lunular brown band enclosing a narrow, grey, lunular, submarginal band, and margined within by a broad blue-grey band, having a narrow, interrupted, irregular black line on its inner edge.

*Hab.* California.

Closely allied to *Heterochroa bredowii*, Hübner (South America and West Indies); but differs from it above in having the lowest cream-coloured spots of the fore wing very small, so as to separate the band from that of the lower wing. In the hind wing it has a simple orange lunule at the anal angle, instead of a double one.

On the underside orange takes the place of rich reddish brown, blue of grey; the orange subapical blotch only extends along the outer margin to the middle of the wing, and does not terminate below in two lunules. The basal upper half of the hind wing is crossed by an additional short orange band; the wings are much more rounded than those of *H. bredowii*, and are not produced at the end of the second median nervule.

6. LIST OF DIURNAL LEPIDOPTERA COLLECTED BY CAPT. A. M. LANG IN THE N.W. HIMALAYAS. BY FREDERIC MOORE.

(Plates XXX., XXXI.)

The following list comprises an enumeration of the Rhopalocerous Lepidoptera recently collected by Capt. Lang, together with his notes as to the particular locality, &c., of the several species.

PAPILIONIDÆ.

1. PAPILIO DISSIMILIS, Linn.

The only place in which I have seen this species is Subbathoo, altitude 4000 feet, in June, frequenting a grassy undulating down, flying rapidly in long circuits, pitching occasionally on grassy knolls, and generally returning by the same route to the same spot after a flight.

2. PAPILIO GOVINDRA, Moore.

*Papilio agestor*, Kollar in Hügel's Kaschmir, pl. 3. f. 1, 2 (nec Gray).



E. Cooke

M & N. Hanhart. imp.

- 1. *Argyannis Iainadeva*
- 2. *Melitea Sindura*.
- 3. *Lasiommata Mnava*
- 4. \_\_\_\_\_ *Baldiva*, ♂.

- 5. *Erchia Kalinda*.
- 6. *Epinephile Cheena*. ♂. ♀.
- 7. \_\_\_\_\_ *Davendra*. ♂. ♀.
- 8. *Pamphila Danna*.

9. *Pamphila Maesa*.



oake. Inta.

M. & N. Harhart. imp.

- |                                 |                                |                                |
|---------------------------------|--------------------------------|--------------------------------|
| 1. <i>Polyommatus Kasmira</i> ♂ | 7 <i>Polyommatus Nareandra</i> | 13 <i>Colias Stripkei</i>      |
| 2. _____ <i>Ariana</i> ♂        | 8 <i>Lycæna Dipora</i>         | 14 <i>Anthocharis Daphalis</i> |
| 3. _____ <i>Nyctala</i>         | 9. _____ <i>Zena</i>           | 15 <i>Pieris Kalora</i> ♂      |
| 4. _____ <i>Nazira</i>          | 10 <i>Chrysophanus Kasyapa</i> | 16 _____ <i>Ajaka</i> ♀        |
| 5. _____ <i>Chandala</i>        | 11 <i>Thecla Deria</i>         | 17 _____ <i>Hira</i> ♀         |
| 6. _____ <i>Vicrama</i> ♀       | 12 <i>Iterda Oda</i> ♀         | 18 <i>Gonepteryx Zanaka</i>    |

Allied to *P. agestor*, and figured as such by Kollar, but differs from that species in being somewhat smaller. Markings similar, but grey instead of a slaty colour, those on the disk of the hind wing being defined by three graduating series of pale spots, the interspaces being black. Exp.  $3\frac{1}{2}$  inches.

*Hab.* N.W. Himalayas.

*Note.*—"Appears rare, as I have only taken two specimens, both in identically the same spot, in April, at Kussowlie, on the first range of the Himalayas, 6000 feet altitude. Each of these individuals affected a high spray of bramble, whence it dashed off for a rapid soar for a short distance, returning to its post."

3. *PAPILIO PAMMON*, Linn.

Rare in the N.W. Himalayas, and at low elevations.

4. *PAPILIO POLYTES*, Linn.

Rare in the N.W. Himalayas, and at low elevations.

5. *PAPILIO POLYCTOR*, Boisd. Spéc. Gén. Lép. p. 205; Jacquemont's Voy. dans l'Inde, Ins. t. 1. f. 1, 2; Hügel's Kaschmir, iv. pt. 2. tab. 1.

Abundant about springs, rivulets, and on the damp sandy margins of larger streams in all parts of the N.W. Himalayas, at least as far as the crossing of the Sutlej at Wangtoo; but as we approach the bleaker Tibetan uplands it disappears. Larva feeds on *Xanthoxylon hostile*.

6. *PAPILIO ERITHONIUS*, Cramer, Pap. iii. t. 232. f. A, B.

This is constant to the Aurantiaceæ, mountains and plains.

7. *PAPILIO MACHAON*, Linn.

Abundant in the N.W. Himalayas, on grassy downs and slopes, from 6000 to 10,000 feet altitude.

8. *PAPILIO SARPEDON*, Linn. (Cramer, Pap. t. 122. f. D, E).

Seen but in few places, and never more than one at a time. It is bold and rapid in flight, and not easily captured.

9. *PAPILIO CLOANTHUS*, Westwood, Arc. Ent. pl. 11. f. 2.

Equally rare with *P. sarpedon*, affecting the same localities, and can hardly be distinguished from it when on the wing. Both species taken sitting with closed wings by the moist margins of a trickling rill. Altitude 5000 to 7000 feet, N.W. Himalayas.

10. *PAPILIO PROTENOR*, Cramer, Pap. t. 49. f. A, B.

A considerable number seen together, floating and flapping their wings lazily and then settling on the blossoms, in waste marshy ground overgrown with Compositæ (thistles). I have also seen a number congregated with *P. polyctor* on the damp sandy margins of

streams in the hills. On these occasions, if disturbed, they disperse, only to collect in groups again. N.W. Himalayas; elevation 4000 to 7000 feet.

11. *PARNASSIUS JACQUEMONTI*, Boisd. Spéc. Gén. Lép. p. 400; Hügel's Kaschmir, iv. t. 2. f. 3, 4; Gray, Catal. Lep. Brit. Mus. pt. 1. pl. 12. f. 1, 2.

Replaces *P. hardwickii* on the high passes of Upper Kunawur, Spiti, and Tibet. I first saw it on the "Kongma" pass, leading from Kunawur into the Chinese province of Gughe in Tibet, at an altitude of 18,000 feet. This pass is 16,000 feet; but I ascended up its flank another 2000 to enjoy the far view over the distant Tibetan ranges, brown and treeless, closed to European foot, and backward among the sharp icy pinnacles of our own more familiar Himalayan ranges: and here I saw this *Parnassius* coursing rapidly up and down the frozen snow-beds, where beaches, as it were, of boulders and stones cropped out. What could tempt *Parnassius* there I know not, for I saw not a *Sedum*, nor a Saxifrage, nor any other vegetation. I met this *Parnassius* again at high elevations in similar regions along the confines of Kunawur and Tibet. It does not occur, apparently, with the next.

12. *PARNASSIUS HARDWICKII*, Gray, Lep. Ins. Nepal, pl. 4. f. 1, 1a; Catal. Lep. Brit. Mus. Pap. pt. 1. pl. 12. f. 8-11.

Commences at the Runang Pass, becoming commoner as we travel south and west towards Lower Kunawur and Simla, not extending nearer the plains than Simla, however. It is tolerably abundant on the Mahâsoo ridge, near Simla, on bare grassy hill-tops, just clear of oak-woods: grassy open downs it certainly affects, and at a high elevation—8000 feet. Has a slow flight, somewhat like that of *Pieris*, although it has a strong as well as slow flight. It flies low over the turf and rocks which crop up amidst the grass. There appear to be two broods, early spring and late autumn. The red and blue spots vary much in different specimens, being quite obsolete in some. I have seen it in December and February, on bright days succeeding weeks of snow-storms.

13. *PARNASSIUS*, sp.?

This is a more handsome and rarer species. I caught it on but two passes, the "Runang" and "Hunglung,"—at the former in company with *P. hardwickii*, and at the latter with *Pontia nina*, thus apparently occupying the debateable ground between the two, and linking them together. I saw many more than I caught, for, as may be imagined, rapid pursuit, now up a steep hill-side, now down, and then up again, at 14,000 to 15,000 feet altitude above the sea, is trying to the best of lungs. This species has a peculiar flight, swimming very fast and close to the ground in a zigzag course, as if beating the ground like a hen harrier beating a meadow.

## PIERIDÆ.

## 14. APORIA AGATHON, Gray, Lep. Ins. of Nepal, pl. 8. f. 1.

This is a mountain-insect, frequenting forests and shady glens. At Simla I saw it in considerable numbers in June. Its flight much resembles that of *Danais chrysippus*, and it is of easy capture. It appears local, as I have seen it only at Simla, and in some richly wooded glens upwards of 100 miles in the interior of the Himalaya.

## 15. APORIA SORACTA (Boisd.); Moore, Catal. Lep. Mus. E. I. C. i. p. 83.

An Himalayan species, and may be seen in some abundance in forests, at altitudes of 6000 to 8000 feet. It is essentially a forest insect, not affecting gardens or grassy slopes.

## 16. PIERIS DAPLIDICE, Linn.

*Note.*—"I saw this *Pieris* in considerable numbers, flying about the village-fields of cereals and turnips, in the villages on the Spiti River, Leo, Chango, Shiálkur, &c., and in the Chinese frontier village of Shipkee."

## 17. PIERIS MESENTINA, Cram. Pap. t. 270. f. A, B.

Obtained at Kussowlie, 6000 feet elevation, on the first plainwards range of the Himalayas.

## 18. PIERIS KALORA, n. sp. (Pl. XXXI. fig. 15.)

White. *Male.* Fore wing with a transverse quadrate black spot at end of discoidal cell; apex and submarginally before it with a series of ill-defined blackish spots. Underside dull white; fore wing as above; hind wing with all the nervures broadly margined with pale greenish brown, with a submarginal series of lanceolate marks of the same colour, the intermarginal spaces being white.

*Female.* Base of wings, nervures, and exterior margin of hind wing suffused with greenish grey. Fore wing with the discoidal, black, transversely quadrate spot large, the black marginal and submarginal band broad, the interspaces forming a series of white outwardly pointed spots. Hind wing with a similar submarginal, apically black, zigzag band, the intermarginal spaces forming a series of white inwardly pointed spots.

Expanse of ♂  $1\frac{1}{2}$  inch, ♀  $1\frac{1}{3}$  inch.

*Hab.* Passes over the spurs of the Himalayas which run from Spiti southward to the Sutlej.

Allied to *P. calidice* of Europe.

*Note.*—"This insect I saw but twice; once on the 'Hungrung' Pass (15,000 feet elevation), where I saw but one, flying very fast at the top of the pass over the dwarf Tibetan furze (*Carayana versicolor*). On the next pass, the 'Runang,' about 14,800 feet, I saw a good many of this species flying very fast up and down the bare stony slopes just at the summit of the pass. I never saw the insect

again, unless on the Tari pass into Spiti, 15,000 feet, over glaciers and snow-beds, where the rarified air prevented any pursuit of insects, but where I saw some fast-flying white Butterflies which I could not secure."

19. *PIERIS NIPALENSIS*, Gray, Lep. Ins. of Nepal, pl. 6. f. 1, 3. Everywhere in the N.W. Himalayas, up to 10,000 feet altitude.

20. *PIERIS GLICIRIA*, Cram. Pap. t. 171. f. E, F. Abundant in the same localities as preceding.

21. *PIERIS AJAKA*, n. sp. (Pl. XXXI. fig. 16.)

White. *Male* with the costal margin for half its length from the base and extreme base of both wings suffused with black; a patch at the apex of fore wing, and a suffused spot beneath it between the third and second median branches, an indistinct spot at the end of the costal, and the tips of the nervures of hind wing fuliginous black. *Female*. Base of the wings suffused with black; fore wing with the apex, two large spots on the disk, the upper one being between the third and second median branches, the lower on the posterior margin before the angle, the submedian and median nervures, and branches black; hind wing with the nervures and patch near the apex, between the costal and subcostal, black.

Underside yellowish white; nervures and the two discal spots on fore wing blackish. Body and antennæ black.

*Hab.* Lower Kunawur.

"Somewhat local, and not common. Of weak flight, affecting damp glens, and flying low amidst wet herbage. Occurs chiefly in autumn."

Allied to *Pieris gliciria*, but decidedly distinct from that common species.

22. *PIERIS HIRA*, n. sp. (Pl. XXXI. fig. 17.)

White. *Male*. Base of wings and half of costa greyish. Fore wing with the exterior margin irregularly black, this colour commencing from the costa one-third from the apex, extending obliquely across it, enclosing a white spot between the third and second median branches, and then running to the posterior angle. Hind wing with or without indistinct blackish spots on the margin.

*Female*. Fore wing with the base and costal margin fuliginous grey, the exterior marginal black band with two white spots within at the apex; a small black spot near posterior angle; the nervures closing the discoidal cell black. Hind wing with indistinct blackish marginal spots. Underside—hind wing and apex of fore wing yellowish; fore wing with a streak at the end of discoidal cell and two spots on the disk blackish.

Expanse  $1\frac{5}{8}$  inch.

*Hab.* Punjab and Oudh.

Allied to *P. durvasa* (P. Z. S. 1857, p. 103, pl. 44. f. 6).

23. *PIERIS SANACA*, Moore, P. Z. S. 1857, p. 103, pl. 44. f. 4, ♀.

Very rare; obtained only in one richly wooded glen far in the interior of the N.W. Himalayas. Its flight was very strong and fast.

24. *ANTHOCHARIS DAPHALIS*, n. sp. (Pl. XXXI. fig. 14.)

White. *Male*. Fore wing with the costal margin and apex delicately chequered with black; a transverse black spot at end of discoidal cell. Hind wing traversed with irregular pale-greenish bands; a slight apical streak, a small spot at end of the cell, and small spots on cilia black. Body blackish. Underside—fore wing with costa chequered with black; the discoidal black spot with a white centre; the apex chequered with pale greenish brown, the interspaces being pale silvery white. Hind wing yellowish brown, interspersed with numerous large and minute silvery-white spots.

Expansion  $1\frac{1}{4}$  inch.

*Hab.* Middle Kunawur.

*Note.*—“An early spring insect, among cliffs; not common.”

25. *THESTIAS ÆNIPPE*, Cram. Pap. t. 105. f. C, D, ♂; t. 229. f. B, C, ♀.

This species is subject to considerable variation, and the varieties seem constant to localities. The larvæ feed on *Capparis*. I observe a constant difference in the Himalayan and plains varieties, apparently coexistent with and dependent on the species of *Capparis* growing in their separate habitats. The Himalayan specimens from the Sutlej valley are much greyer and finer insects than those from the plains, as the luxuriantly growing, large-leaved, and finely coloured lilac-flowered *Capparis* (sp. ?), which covers like ivy the bold cliffs over the Sutlej, and affords pabulum to the hill *ænippe* larvæ, is a handsomer plant than the coarse straggling thorny bush of the *Capparis sepriaria* of the dry plains with its small white flowers. None but an entomologist, who knew the species well, would say that the two insects were of the same species, were I to put side by side an immense black female from Wangtoo and a small clean white female from Umballa. The upper surface of anterior wing of the former is dark black, with an interrupted white fascia transverse; the posterior wing dull black, with a dusky-white disk; whereas the whole upper surface of the Umballa female is clean white, the anterior wing only having the outer margin and apex black, and a short black streak from the middle of the costa. The two insects are wonderfully unlike. The males are similarly, though not to so great an extent, unlike. Some females have the apical half of the anterior wing pale yellow.

26. *THESTIAS MARIANNE*, Cram. Pap. t. 217. f. C, D, E.

Abundant in the Himalaya. The females vary a good deal, as in *T. ænippe*. I have seen no large black variety, however, to match my Wangtoo *T. ænippe*.



27. *COLIAS EDUSA*, var. *myrmidone*.

Abundant in the Himalayas.

28. *COLIAS HYALE*, Linn.

*Note*.—"Tolerably abundant in the Himalayas, 5000 to 10,000 feet. Common in the meadows and pasture-lands of the Simla Hills and Kunawur; of rapid flight, coursing over the turf and beds of thyme, not dawdling so much as *C. edusa*, which affects the same grounds."

29. *COLIAS NERIENE*, Fischer, Ent. Russ. Lep. t. 11. f. 3, 4.

*Note*.—"This white *Colias* is very common in Lower and Middle Kunawur; an early spring insect, scouring over the gentian-studded turf of the pasture-lands, 6000 to 10,000 feet altitude. It is a very fast flyer, faster than *C. edusa*."

30. *COLIAS SHIPKEE*, n. sp. (Pl. XXXI. fig. 13.)

*Colias shipkee*, Lang, MS.

*Upperside*. Fore wings rich primrose-yellow, some individuals with a warmer tint on the disk; exterior margin broadly black, broadest at apical angle, and having a sinuous inner edge, within which is a series of slightly curved yellow spots, the four upper spots rather lanceolate, the three lower more square; a black spot closing the discoidal cell, which spot in some is annular, enclosing a yellow centre; cilia at apical angle and along exterior margin rosy. Hind wings primrose-yellow, more or less suffused in different individuals with dusky irrorations; a series of acute oval yellow spots within the exterior margin, their edges more or less defined with black; base black; discoidal cell closed by a very faintly defined orange spot; cilia rosy.

*Underside*. Fore wings yellow, the black margin of upperside appearing faintly beneath of a greenish grey colour, and having also indistinctly the series of yellow spots as above; costal margin greenish grey, black spot closing the cell as above. Hind wings dull greenish grey; exterior margin yellow, showing the form of the spots of the upperside; a rufous spot with silvery centre at end of discoidal cell. Antennæ, legs, head, with frontal tuft, and fore part of thorax rosy; palpi greenish yellow; thorax and abdomen greenish grey.

Expanse 2 inches.

*Hab.* Tibet.

*Note*.—"Flies with rapidity over the pastures on the mountain-slopes above the Sutlej, near Shipkee, at an altitude of 13,000 to 15,000 feet, frequenting the meadow-land, rich in grasses and flowers, just below the melting snow-beds in June."

The species of *Colias* that appears to be nearest allied to this is *C. vauthieri* from Chili.

31. *TERIAS HECABE*, Linn.

Has a wide range; Himalayas and plains.

32. *TERIAS SARI*, Horsf.

Same habitat as the preceding.

33. *TERIAS LÆTA*, Boisd. Spéc. Gén. Lép. p. 674.

Taken at Kussowlie, in the Himalayas. It has a very weak flight, amongst low herbage on the skirts of woods and gardens.

34. *GONEPTERYX NIPALENSIS*, Doubleday, Gray's Lep. Ins. of Nepal, pl. 5. f. 1.

Abundant in the N.W. Himalayas, 3000 to 10,000 feet altitude.

35. *GONEPTERYX ZANEKA*, n. sp. (Pl. XXXI. fig. 18.)

Anterior wings falcate; the costal margin constricted at half its length. Hind wings with the outer margin deeply sinuated.

*Male*. Upperside—fore wings brimstone-yellow; posterior wings pale cream-yellow, almost white in old specimens. *Females* duller-coloured; costal margin of fore wing and the whole of hind wing covered with delicate minute corrugated striæ; costal and subcostal veins terminated with minute dark-brown dots; a small ochreous-yellow discocellular spot on both wings. Antennæ and head reddish brown; thorax white, covered with long silky-white hairs; abdomen yellow.

Underside paler and duller cream-colour, having the delicate corrugated striæ as above; the veins of both wings terminated with a dark brown dot; the discocellular spot pale dull brown; both wings with a lower discal series of four small black dots, one between each vein.

Expanse 2 inches.

*Hab.* N.W. Himalayas.

*Note*.—"This is local, and I have seen it in June only in the thick dark forests about Kotgurh and Narkunda, fifty miles from Simla."

36. *CALLIDRYAS PHILIPPINA*, Cram. Pap. t. 361. f. C, D.37. *CALLIDRYAS PYRANTHE*, Linn.

Both species taken in the Himalayas.

38. *CALLIDRYAS ALCMEONE*, Cram. Pap. t. 141. f. E.39. *CALLIDRYAS HILARIA*, Cram. Pap. t. 339. f. A, B, ♂; t. 229. f. D, E, ♀.

Both the preceding seem to frequent the *Cathartocarpus fistula*, which is an indigenous plant to the lower slopes of the outer Himalayan ranges, 2000 to 5000 feet.

## DANAÏDÆ.

40. *EUPLŒA CORE*, Cram. Pap. t. 266. f. E, F.

Not common in the N.W. Himalayas.

41. *EUPLEA MIDAMUS*, Linn. (Cram. t. 127. f. C, D, ♂; t. 266. f. C, ♀).

A single specimen obtained in a valley in the N.W. Himalayas. It appears to be rare in these regions.

42. *DANAIS CHRYSIPPUS*, Linn. (Cram. Pap. t. 118. f. B, C).  
Abundant everywhere.

43. *DANAIS PLEXIPPUS*, Linn. (Cram. Pap. t. 206. f. C, D).  
Tolerably abundant everywhere.

44. *DANAIS LIMNIACÆ*, Cram. Pap. t. 59. f. C, D.

45. *DANAIS MELISSA*, Cram. Pap. t. 377. f. C, D.  
Same localities as above.

46. *DANAIS TYTIA*, Gray, Lep. Ins. Nepal, pl. 9. f. 2.

Entirely Himalayan. Obtained in wooded glens, 6000 to 7000 feet altitude. Flight high and soaring.

#### NYMPHALIDÆ.

47. *VANESSA CHARONIA*, Drury, Ins. i. t. 15. f. 1, 2.

This is a thoroughly Himalayan forest-insect, of swift flight.

48. *VANESSA XANTHOMELAS*, Denis et Schiff.

A local Himalayan forest-insect.

49. *VANESSA KASCHMIRENSIS*, Kollar, Hügel's Kaschmir, iv. t. 9. f. 3, 4.

As abundant in the Himalayas as *V. urticæ* in England.

50. *PYRAMEIS CALLIRHOË*, Hübner (Cram. t. 84. f. E, F).

Abundant in the Himalayas, 5000 to 10,000 feet.

51. *PYRAMEIS CARDUI*, Linn.

Everywhere common in the Himalayas at all seasons.

52. *JUNONIA LEMONIAS*, Linn. (Cram. Pap. t. 35. f. D, E, F).

Observed in the Himalayas.

53. *JUNONIA GÆNONE*, Linn. (Cram. Pap. t. 35. f. A, B, C).

Same localities as preceding.

54. *JUNONIA ORITHYIA*, Linn. (Cram. Pap. t. 32. f. E, F, ♂; t. 19. f. C, D, ♀).

Same localities as preceding. Partial to bare, dry grass-land. To be seen in the hottest hot winds, and in the bleak wintery weather pitched on the grass, flitting quickly away and pitching again after a short circuit. Larva reared on *Antirrhinum orontium*.

55. *PRECIS IPHITA*, Cram. Pap. t. 209. f. C, D.

Rather abundant in the Himalayas.

56. *PRECIS HARA*, Moore, Catal. Lep. Mus. E. I. C. i. pl. 3 a. f. 1.

An Himalayan species. Not so abundant as the preceding. Generally seen on the banks of streams.

57. *ATELLA PHALANTA*, Drury, Ins. i. t. 21. f. 1, 2.

Tolerably abundant up to 8000 feet elevation.

58. *LAOGONA HYPOCLA*, Cram. Pap. t. 220. f. C, D.

59. *ARGYNNIS NIPHE*, Linn. (Cram. Pap. t. 14. f. C-E; Hügel's Kaschmir, iv. pl. 13. f. 12 ♂).

Tolerably abundant in certain localities, 6000 to 8000 feet in the Himalayas. The males seem much more abundant than the females.

60. *ARGYNNIS ISSÆA*, Gray, Lep. Ins. Nepal, p. 11.

Very abundant in the Himalayas, 5000 to 8000 feet. At all seasons of the year, even in winter, when snow lies deep on sheltered slopes, this insect may be seen on open sunny sites.

61. *ARGYNNIS CHILDRENI*, Gray, Lep. Ins. Nepal, pl. 11.

An Himalayan species, frequenting grassy slopes near woods, open copses, and gardens, 7000 to 10,000 feet elevation. Flight bold and very fast. Affects Compositæ and Cruciferæ. Not a very common species.

62. *ARGYNNIS KAMALA*, Moore, Catal. Lepid. Mus. E. I. C. i. p. 156.

Abundant throughout a tract of 120 miles, at an altitude of 6000 to 10,000 feet, in the summer and autumn months, in the Simla district and Lower Kunawur. It affects open glades and the borders of forests, pitching on low shrubs, brambles, and banks of thyme, thistle, scabious-heads, &c.

63. *ARGYNNIS JAINADEVA*, n. sp. (Pl. XXX. fig. 1.)

*Male*. Upperside rich fulvous; markings black; fore wing with four discoidal streaks, the fourth double and closing the cell; a transverse discal series of narrow lunulated spots irregularly disposed, but each joined to the other by being continued in a line on the vein; a small suffused spot before the apex; a second discal series of round spots, a submarginal row of lunules, and a double marginal line. Hind wing with a double mark closing the cell; an irregular transverse discal series of lunules; a second discal series of three round spots and an upper intermediate dot; a submarginal row of well-defined lunules, and a double marginal line; cilia pale fulvous yellow. Underside—fore wing pale fulvous, greenish yellow apically; markings as above, except that those at the apex and the marginal

line are pale green, the inner apical spaces being silvery white. Hind wing pale green, yellowish across the disk and along exterior margin; basal and a transverse discal series of spots, and a marginal row of lunules, silvery white, those of the two former more or less with a black border, the latter bordered by a black marginal line; a few rufous-brown spots outside the discal series.

*Female* of a deeper colour; markings the same, but larger.

Expanse of ♂  $1\frac{3}{4}$ , ♀ 2 inches.

*Hab.* Upper Kunawur.

Very common in Upper Kunawur; not appearing in Lower Kunawur. This is a companion to the above (*A. kamala*), but only for some twenty miles of its furthest northern range, appearing first on the meadows of "Cheni," the finest village of Kunawur; this and the next ten miles appear its head quarters. I caught it, however, far to the eastward, on the bare, treeless, shrubless regions of the Zungcham River, in Tibet (an affluent of the Spiti). It flies from May till November.

This species is allied to *A. clara*, Blanchard, figured in Jacquemont's 'Voy.' Ins. pl. 2. f. 2, 3.

#### 64. MELITEA SINDURA, n. sp. (Pl. XXX. fig. 2.)

Wings ferruginous; costa and base of wings blackish. Fore wing with narrow marginal band, two marks within discoidal cell, and two transverse series of discal spots black; a series of black-margined, pale-centred submarginal lunules. Hind wing with the marginal black band and submarginal lunules as in fore wing, also a series of three small black spots from anal angle. Cilia white, spotted with black. Body ferruginous black. Underside—fore wing clear ferruginous, yellowish about the apex, with the discal markings as above, but less defined, and a marginal series of yellowish lunules. Hind wing with ferruginous base, yellow disk, a pale ferruginous submarginal and marginal band (each with bright ferruginous spots), and an intermarginal series of yellowish lunules. Sexes alike.

Expanse  $1\frac{2}{8}$  inch.

*Hab.* Kongma Pass, N.W. Himalayas.

This is very local, apparently. I have seen it but in one place, on one acre of ground I may say, on a patch of very stony pastureland, at 16,000 feet altitude, on the "Kongma" pass, leading from Kunawur into the Chinese province of Gughe in Tibet: ground not clear of snow for more than four months in the year. Here one day I saw a great number of these insects flying, an icy-cold wind blowing all the time, so that the insects were blown about, and never more than an inch or so above the ground. No other Lepidoptera near them did I see but a stray *Colias edusa*, and several *Parnassii* coursing up and down the snow-banks a little higher up.

#### 65. CYRESTIS THYODAMAS, Boisd. in Crochard's edit.; Cuv. Règ. An. Ins. t. 138. f. 4; Hügel's Kaschmir, iv. t. 7. f. 3, 4.

An Himalayan forest-insect, difficult to capture at all. It generally frequents a well-wooded glen; and in such a place I have often

watched its elegant soaring flight, far out of reach, as it floated over the blossoms of the horse-chestnut (*Pavia indica*), or rested on its broad leaves in the sunshine. I have also seen it floating up and down the foliage-covered face of a steep cliff overhanging a hill-torrent, and rarely would it come within reach.

66. *NEPTIS ACERIS*, Esper, t. 81. f. 3, 4; t. 82. f. 1.

Common in woods and gardens in the Himalayas. It has a beautiful flight, floating in and out of the sunlight in the shade of trees, occasionally basking on the sun-bathed foliage, or resting, in groups of half a dozen or more, on the moist fern-covered rocks in the midst of the stream in some Himalayan glen.

67. *NEPTIS NANDINA*, Moore, Catal. Lep. Mus. E. I. C. pl. 4 a. f. 7.

68. *NEPTIS ZAIDA*, Doubleday, Gen. Diurn. Lep. pl. 35. f. 3.

An Himalayan species. Has somewhat the same flight as *N. aceris*, but more fond of pitching on the ground in the shade of trees or rocks, as the two following species.

69. *ATHYMA LEUCOTHOË*, Linn. (Cram. Pap. t. 203. f. E, F).

70. *ATHYMA OPALINA*, Kollar, Hügel's Kaschmir, iv. p. 427; Moore, Catal. Lep. Mus. E. I. C. i. pl. 5 a. f. 2.

71. *LIMENITIS LIGYES*, Hewitson, Trans. Ent. Soc. Lond. 3rd ser. ii. p. 246 (Nov. 1864).

*Limenitis trivena*, Moore, Ent. Monthly Mag. November 1864, p. 131.

Not common, although it has a wide range of some 200 miles north and east of Simla; appearing to prefer the rich woods and forests of the moister ranges, but continuing as far as the cedar- and Gerard's pine-forests extend, to Soongnum, the capital of Upper Kunawur. On the wing from May to July; flight quick—sometimes slow, floating in and out of the sunlight.

72. *HESTINA PERSIMILIS*, Westw. Doubleday & Hewitson, Diurn. Lep. p. 281.

Rare, N.W. Himalayas, 4000 to 7000 feet. One I caught in a narrow glen, well wooded with undergrowth; others in an orchard of plum and apricot, on the ripe fruit of which these insects (with *Castalia* and *Athyma*) were settling, both on the trees and on the fallen fruit below the trees.

73. *CASTALIA DICHROA*, Kollar, Hügel's Kaschmir, iv. p. 429, t. 8. f. 1, 2.

Same habits and somewhat the same locality as the former; but I have also seen it in open woods further in the interior of the Himalayas, pitching on the sprays of tall shrubs; making rapid flights, and returning to the same spot.

74. *ADOLIAS GARUDA*, Moore, Trans. Ent. Soc. Lond. n. s. v. pl. 3. f. 2, ♂ ♀.

N.W. Himalayas.

75. *ADOLIAS DOUBLEDAYI*, Gray, Lep. Ins. Nepal, pl. 13.

*Adolias epiona* (Gray), Moore, Trans. Ent. Soc. v.

Frequents oak-forests, at altitudes of 6000 to 8000 feet, in the Himalayas during the rainy season, July and August. It flies very swiftly over the tops of the trees, with a skimming flight like a Swallow. Two or three may be seen chasing one another in and out of the shade, among the branches of the trees. They pitch abruptly, often with expanded wings, basking in the sunlight, until some passing insect—another *Adolias* or a *Neptis* floating near—tempts the quarrelsome insect to dash off, buffet the passer-by, and, after a rapid skim, return to pitch again suddenly near its former resting-place, and bask again. It soon gets battered, and is difficult to capture.

76. *NYMPHALIS ATHAMAS*, Drury, Ill. i. t. 2. f. 3, 4.

An insect of extremely rapid flight, flashing like lightning up and down rocky-bedded streams in Himalayan glens, 3000 to 5000 feet. It pitches on rocks in mid-stream, and flashes off again if approached. It is not common, and very difficult to capture; yet one very hot day in June I saw seven individuals sitting with closed wings motionless on a foul spot (by the damp sandy margin of a stream), so close together that I might have put my hat on all of them. Except on that occasion, I have never seen more than one at a time.

#### SATYRIDÆ.

77. *DEBIS EUROPA*, Fabr. (Cram. Pap. t. 313. f. E, F, ♂; t. 79. f. C, D, ♀).

A common species, obtained at Kussowlie (6000 feet), frequenting grassy slopes in the shade or near hedges; constantly pitching under bushes or at roots of trees, and lying *perdu*.

78. *DEBIS ROHRIA* (Fabr.).

*Satyrus isana*, Kollar, Hügel's Kaschmir, t. 16. f. 3, 4, p. 448.

This frequents another region, 200 miles from Kussowlie, in damp glens, where tall rocks cast a shadow all day: this insect affects the shade, pitched on the rocks or at their foot, or in the rank vegetation near, never seeking the broad sunshine.

79. *DEBIS VERMA*.

*Satyrus verma*, Kollar, Hügel's Kaschmir, t. 16. f. 1, 2, p. 447.

Frequents the same region as *Debis rohria*, but is more autumnal, and affects trees in preference to rocks, pitching on the trunks of rhododendrons and oaks.

## 80. ENOPE PULAHA, Moore, Catal. Lep. Mus. E. I. C. i. p. 227.

Observed only in two localities far apart in the interior of the Himalayas, in dark forests of oak, sycamore, and horse-chestnut, affecting shade, and pitching on trunks of trees.

## 81. LASIOMMATA SCHAKRA.

*Satyrus schakra*, Kollar, Hügel's Kaschmir, p. 446, t. 15. f. 3, 4.

A very common Himalayan species, to be seen at all seasons flitting about the rocky roadside, and pitching on the rocks or banks; more abundant on the outer Himalayan ranges, on bare grassy slopes.

## 82. LASIOMMATA SATRICUS, Doubleday; West. &amp; Hewits. Diurn. Lep. pl. 64. f. 4.

Observed only late in the autumn, in a forest glade in the Himalayas, near a stream with rich vegetation about its banks.

## 83. LASIOMMATA MENAVA, n. sp. (Pl. XXX. fig. 3.)

*Male* fuliginous brown; fore wing with a large apical jet-black ocellus, with white pupil and ferruginous iride; also a much smaller ocellus between it and the apex. Hind wing with two similar ocelli, placed submarginally midway between the anterior and posterior angles. Underside with the discal portion of the fore wing ferruginous; a series of four transverse discoidal streaks and a submarginal line dark brown, each bordered with pale grey; the ocelli as above, but with yellow irides. Hind wing pale greyish brown, with irregular transverse basal brown lines; a series of six black submarginal ocelli, the first five with each a white pupil and a double brown-bordered yellow iris; the sixth, at the anal angle, without the white-pupilled black centre; a submarginal series of whitish-grey lunules.

Expanse  $1\frac{6}{8}$  inch.

*Hab.* Middle Kunawur.

Allied to *L. schakra*, Kollar (Hügel's Kaschmir, pl. 15. f. 3, 4).

*Remark.*—Is this a geographical variety of *L. schakra*? It comes from Middle Kunawur, the pleasant villages of Pangi and Rarung, where the last showers of rain fall, at rare intervals. It does not venture to the drier regions above described; and its uniformly dark colour remains constant, and seems to distinguish it from the more fulvous *L. schakra* so common on every rocky roadside in Lower Kunawur and the Simla Hills.

## 84. LASIOMMATA BALDIVA, n. sp. (Pl. XXX. fig. 4.)

*Male.* Upperside—fore wing fuliginous grey; hind wing ashy grey; both wings with a broad, irregularly margined, discal ferruginous band, which has on the fore wing an upper and a lower blackish spot, on the hind wing a small spot at its lower end.

*Female* paler; the fore wing with the spots on the discal band larger, there being also a third intermediate smaller spot; the spot



on the hind wing with a white pupil. Underside grey, of the female greyish white, with numerous short blackish striæ; fore wing with the disk pale ferruginous, the margins of the band (as seen from above) defined by irregular black lines; fore wing in the male with a single, in the female with two black spots; the apical with white pupil and yellow iride; the black dot on the hind wing also with white pupil and yellow iride. Cilia silvery grey.

Expanse  $1\frac{7}{8}$  inch.

*Hab.* Spiti and Tibet.

Allied to *L. telephassa*.

On the bare, brown, stony mountain-slopes of Spiti, Upper Kunawur, Tibet; this species seems to delight in the hot weather of June and July.

85. SATYRUS SWAHA, Kollar, Hügel's Kaschmir, p. 444, t. 14. f. 1, 2.

Very common during the rains (August and September) in the interior of the Himalayas, chiefly on grassy slopes and in fields near woods; also in open woods.

86. SATYRUS SARASWATI, Kollar, Hügel's Kaschmir, p. 445, t. 14. f. 3, 4.

Frequents the same ground as the preceding, at the same season, and has the same flight.

87. SATYRUS AVATARA, Moore, Catal. Lep. Mus. E. I. C. i. p. 229.

N.W. Himalayas, 8000 to 10,000 feet; frequenting bare grassy, rocky slopes close to oak-forests. A bolder insect than the preceding: Nymphalidan in flight and habit, and appearing in May and June before the rainy season.

88. HIPPARCHIA PARYSISIS.

*Satyrus parysatis*, Kollar, Ins. Faun. S. Persia (Mem. Acad. Vienna), i. p. 11.

Obtained on steep precipices over bare hill-sides above the Sutlej; and these Himalayan precipices are not quite the ground for the entomologist, net in hand, and eye fixed on the soaring insect. The aspect of the insect on the wing is quite Nymphalidan—a soaring flight, swift if frightened, pitching in all sorts of inaccessible spots. Subsequently found very common in Upper Kunawur, always on steep cliffs, pitching on rocks.

89. EREBIA ANNADA, Moore, Catal. Lep. Mus. E. I. C. i. p. 226.

The species of *Erebia* are autumnal insects of weak flopping flight, with an irregular pitching action, frequenting bare grassy slopes.

90. EREBIA SCANDA, Kollar, in Hügel's Kaschmir, iv. p. 452, t. 17. f. 3, 4.

*Hab.* Lower Kunawur.

This species appears in the height of the rainy season (July and August) about the hedges and banks in Lower Kunawur, altitude 6000 to 7000 feet. Good fresh specimens are of a velvety black-brown above, and beneath have the lower wing very whitely salted, so that as they fly they look distinctly party-coloured.

91. *EREBIA NIRMALA*, n. sp.

*Male*. Upperside uniform dark brown; fore wing with a subapical black ocellus, having two white pupils and a dark ferruginous iride; hind wing with a similar but single-pupilled ocellus near anal angle. Underside greyish brown, discal portion of fore wing maroon-brown; ocelli of both wings as above, but with the iride yellow; a white dot below the ocellus of fore wing, and a discal series of four white dots anterior to the ocellus of hind wing. Cilia brown. Expanse 2 inches.

*Hab.* N.W. Himalayas.

*Remark*.—Allied to *E. scanda*, Kollar (Hügel's Kaschmir, p. 452), but differs in having a somewhat more elongated fore wing. On the underside it may be distinguished by the absence of the numerous white striæ on the hind wing, and by there being a single ocellus only near the anal angle.

92. *EREBIA KALINDA*, n. sp. (Pl. XXX. fig. 5.)

*Female*. Upperside greenish velvety brown; both wings with a ferruginous discal patch, that on the fore wing being subapical; fore wing with an apical black spot, having a white pupil and yellow iride. Underside dull brown; fore wing as above, but the ferruginous colour extending anteriorly across the discoidal cell; hind wing with a submarginal series of white dots; ferruginous patch obsolete.

Expanse  $1\frac{7}{8}$  inch.

*Hab.* N.W. Himalayas.

This is local, and I saw very few; at two places, on the hill-sides below the Runang and Werang passes—not at the summit of the pass, but some 2000 feet lower down. A weak low flight it has, amongst the grass and flowers.

93. *EPINEPHILE CHEENA*, n. sp. (Pl. XXX. fig. 6.)

Dark brown. *Male* with a subapical, black, ferruginous-encircled spot; also a similar minute spot some distance below it. Underside pale greyish brown; fore wing with its discal portion ferruginous; a medially submarginal dark brown streak and an ill-defined discal transverse line; the subapical ocellus as above, but with a white pupil and yellow iride; hind wing covered with minute delicate brown striæ.

*Female* with three black ferruginous-encircled ocelli, the upper and lower large, the central small. Underside as in male, but having the lower ocellus as in upperside, the central one being obsolete.

Expanse of ♂  $1\frac{6}{8}$  inch, ♀ 2 inches.

*Hab.* Kunawur.

Allied to *E. janira*.

“The ‘meadow-brown’ of the meadows of Rogi and Cheeni in Kunawur. It is limited in its range, not appearing to the westward, nor venturing further north and east into the drier lands affected by the other two *Satyri* (*Epinephile davendra* and *Lasiommata baldiva*).”

94. *EPINEPHILE DAVENDRA*, n. sp. (Pl. XXX. fig. 7.)

*Male* greyish brown; fore wing with the space within the discoidal cell to near the apex and then descending to near the posterior margin ferruginous, this colour being distinctly defined; within it is a single black apical spot. Underside with the costal and exterior margins of fore wing greyish brown, the inner space pale ferruginous, the apical ocellus with white pupil and brown-bordered yellow iride, which latter, however, does not encircle the spot, being cut off as it were posteriorly; a short streak before the ocellus, and a submarginal line, dark brown. Hind wing grey, with delicate minute brown striæ; a discal and a submarginal line dark brown, the former irregularly across the disk from middle of anterior to posterior margin, both bordered outwardly with pale white, and having a single anterior and two posterior black ocelli, each with a yellow brown-bordered iride, and the anterior with a white pupil.

*Female* pale grey; the ferruginous space in the fore wing ill defined; and with a second black spot situated near the posterior angle. Underside as in male, but with the lower black spot on fore wing as above, the anterior ocellus on the hind wing being minute or nearly obsolete.

Expanse  $1\frac{3}{4}$  inch.

*Hab.* Spiti and Tibet.

Allied to *E. eudora*.

This is a Tibetan and Spiti insect, affecting the dry hot summer of the rainless region of the Chinese frontier. On a hot June or July day, these sober insects may be seen flitting about the stony hill-sides, 9000 to 12,000 feet altitude—hill-sides where the Graminaceæ are scarce and brown, and grey *Artemisia* and *Ephedra* form the principal vegetation. They do not occur in the moister and more wooded regions of the Himalayas; but first appear on the confines of Upper Kunawur, in Spiti, and the Chinese provinces of Gughe (? Cughe) and Nâri Khorsum (Tibet).

95. *YPHTHIMA SAKRA*, Moore, Catal. Lep. Mus. E. I. C. i. p. 236.

*Hab.* Simla Hills and Lower Kunawur.

96. *YPHTHIMA*, sp.?

The species of *Ypthima* are all Himalayan insects of very feeble flight, frequenting banks, hedges, and grassy land.

97. *LIBYTHEA MYRRHA*, Godt. (Gray's Lep. Ins. Nepal, pl. 12. f. 4).

Not uncommon in Himalayan woods.

## ERYCINIDÆ.

## 98. DODONA DURGA.

*Melitæa durga*, Kollar, Hügel's Kaschmir, p. 411, t. 13. f. 3, 4.  
*Dodona durga*, Hewitson.

Common on pasture and grassy slopes in the Himalayas, 5000 to 8000 feet. Fond of sunshine; flight quick, almost Hesperidan.

## 99. DODONA EGEON.

*Emesis egeon*, Boisd.; Doubleday & Hewitson's Diurn. Lep. pl. 69. f. 2.

Observed once only, in September, in a richly wooded Himalayan glen, full of horse-chestnut, maple, sycamore, oak, and rhododendron, through which fell, in numerous little cascades, a clear stream, bordered with bushes (*Rubus*, &c.) and an undergrowth of grasses, ferns, &c.—quite a different country to that of the preceding. I passed this glen once in September. In former or subsequent months I never saw this insect there; it appears therefore to have but one short-lived, autumnal brood. The insects were pretty numerous, seated on tall Umbelliferæ, and flitting from plant to plant with short quick flights, in an open glade in the glen, close to the stream.

## LYCÆNIDÆ.

## 100. POLYOMMATUS KASMIRA, n. sp. (Pl. XXXI. fig. 1.)

*Male*. Upperside purplish lavender-blue; exterior margin of both wings blackish. Underside cream-white; fore wing with an indistinct discocellular streak, beyond which, one-third from the apex, a single white-encircled black spot; a transverse discal series of four white-encircled black spots; a marginal double row of indistinct blackish lunules; hind wing with twelve basally disposed, white-encircled, black spots; a marginal row of blackish spots, bordered by a submarginal series of indistinct blackish lunules.

*Female* brighter blue above; costa and exterior margin of fore wing and anterior margin of hind wing broadly dull black; hind wing with a marginal row of blackish spots, bordered by a submarginal series of lunules. Underside as in male. Cilia white.

Expanse 1 to  $1\frac{1}{4}$  inch.

*Hab.* N.W. Himalayas.

## 101. POLYOMMATUS NYCULA, n. sp. (Pl. XXXI. fig. 3.)

Upperside dark lilac-blue; cilia and inner margin of hind wing whitish. Underside—fore wing pale purplish cream-colour, bluish grey along exterior margin; a spot closing the discoidal cell and a linear series of five spots medially across the disk white; hind wing metallic bluish-grey. Body white.

Expanse  $1\frac{1}{4}$  inch.

*Hab.* Kunawur.

This species is not common. It frequents the beautiful flower-

carpeted pasture-lands on the mountain-sides in Kunawur, at 11,000 to 12,000 feet—those smiling “alps” where the villagers drive their herds when the early summer has set in, and the melting snow leaves this gay carpet of flowers on spots which for many months had remained hidden beneath a thick snowy mantle.

102. *POLYOMMATUS NAZIRA*, n. sp. (Pl. XXXI. fig. 4.)

Upperside satin-brown; fore wing with a black spot closing the discoidal cell; both wings with a marginal series of blackish dots, bordered inwardly with a submarginal row of deep-red lunules. Underside purplish cream-colour; both wings with a submarginal red band, bordered exteriorly with black dots, internally with blackish lunules, and margined on both sides with white lunules; fore wing with a spot closing the cell, five and a geminated sixth irregularly across the disk; and hind wing with eight spots also irregularly across the disk, three basal and one closing the cell black, each encircled with white; a dash of white longitudinally on the disk of hind wing. Cilia broad, white, with black spots.

Expanse 1 inch.

*Hab.* Kunawur.

103. *POLYOMMATUS ARIANA*, n. sp. (Pl. XXXI. fig. 2.)

*Male.* Upperside brilliant blue; anterior margin of hind wing black, inner margin whitish; cilia broad, white. Underside purple-grey, suffused with metallic greenish grey at base of hind wing; fore wing with a small spot within discoidal cell, another closing the cell, a submarginal discal series of six spots (the posterior, sixth, geminated), black, each encircled with white; a marginal series of ill-defined double whitish spots, the posterior having slight dark centres; hind wing with two basal and a submarginal discal series of seven black spots encircled with white; a marginal row of whitish spots, each centred exteriorly with a dark and interiorly with a reddish spot; a triangular spot in centre of the wing, and a streak from middle of exterior margin, whitish. Body white.

*Female* duller lilac-blue, with the exterior margin of both wings brownish. Underside as in male.

Expanse of ♂  $1\frac{3}{8}$  inch, ♀  $1\frac{1}{2}$  inch.

*Hab.* Kunawur.

An abundant species, frequenting pasture- and meadow-land in the summer months, at altitudes of 8000 to 10,000 feet, lighting on the gentians which stud the green turf.

104. *POLYOMMATUS CHANDALA*, n. sp. (Pl. XXXI. fig. 5.)

*Male* dull silvery blue, with purplish-brown exterior margins. Underside pale grey, with a spot within discoidal cell, a discocellular streak, a transverse discal linear series of six clear-white-encircled black spots, between which and exterior margin a series of indistinct pale-bordered lunules; hind wing with basal and discal

series of pale brown, whitish-encircled spots, and a marginal row of indistinct pale-bordered lunules: cilia purplish brown.

Expanse 1 inch.

*Hab.* Lower Himalayas and plains of N.W. India.

This is a generally distributed species, affecting both the plains and the Lower Himalayan valleys, occasionally ascending the mountain slopes to 6000 feet altitude. I have taken it in the later autumn months in Oudh, the Punjab, and Lower Himalayas.

105. *POLYOMMATUS VICRAMA*, n. sp. (Pl. XXXI. fig. 6.)

*Male* dull greyish blue; exterior margins brown; cilia broad, white, with brownish spots. Underside greyish cream-colour, exterior margins defined by a black line: fore wing with a central discoidal spot, another closing the cell; a series of spots recurving transversely from costa to posterior margin and a submarginal row of spots black, each encircled with white: hind wing with thirteen white-encircled black spots, and a marginal double row of red-inter-spaced black lunules: cilia as above.

*Female* bluish-purple brown; marked as in male.

Expanse of ♂  $\frac{10}{12}$  inch, ♀  $\frac{11}{12}$  inch.

*Hab.* Kunawur; Tibet.

An uncommon species; to be seen flitting from flower to flower on moist meadow-land fed by streams from melting snow-beds. Cheeni in Middle Kunawur, and the Alps above the Chinese village of Shipkee in Tibet, are the localities; May, June, and July the season.

106. *POLYOMMATUS KARSANDRA*, n. sp. (Pl. XXXI. fig. 7.)

Upperside purple-brown. Underside greyish brown, exterior margins defined by a brown line: fore wing with a spot within discoidal cell, a discocellular streak, a spot above it, and a transverse discal series of six spots black, each encircled with white; a marginal and submarginal row of pale brown, white-bordered lunules: hind wing with a series of twelve black spots, and a pale discocellular streak, encircled with white; a marginal row of pale brown, whitish-encircled spots, and a submarginal row of whitish lunules: cilia greyish brown.

Expanse  $\frac{10}{12}$  inch.

*Hab.* Plains of N.W. India.

A common species in the plains, from Oudh to the Punjab.

107. *LYCÆNA ZENA*, n. sp. (Pl. XXXI. fig. 9.)

Upperside pale purple-brown; hind wing with a small brown spot near anal angle of exterior margin. Underside pale grey, exterior margins defined by a brown line: fore wing with a black dot on costa, one-third from the apex; a discocellular spot, an interrupted transverse discal band, and a submarginal lunulated line pale brown, each with whitish borders: hind wing with three subbasal spots, another on anterior margin, and two from anal angle black, encircled

with white ; a discal series of pale whitish lines, and a marginal row of white circles.

Expanse  $\frac{9}{12}$  inch.

*Hab.* Plains of N.W. India.

Common in Oudh in the winter months, November to February. I have caught it also at Umballa, in the Punjab. It is not an Himalayan insect.

108. *LYCÆNA DIPORA*, n. sp. (Pl. XXXI. fig. 8.)

Upperside dull violet-blue ; hind wing with a tail ; a discocellular spot on fore wing and exterior margins of both wings broadly brown ; cilia grey, with a narrow medial brown line. Underside greyish cream-colour, exterior margins defined by a brown line : fore wing with a narrow discocellular streak, and a transverse discal straight series of white-encircled black spots ; a submarginal row of pale brown spots : hind wing with three basal and a thrice-interrupted discal series of eight white-encircled black spots ; a medially disposed marginal orange-red band, bordered inwardly with brown lunules, outwardly with (two clear, the rest ill-defined) black spots : cilia as above.

Expanse  $\frac{11}{12}$  inch.

*Hab.* Kussowlic, N.W. Himalayas.

A slight delicate species, from Kussowlic ; not very common ; generally found near water.

109. *CHRYSOPHANUS TIMEUS*.

*Pap. timeus*, Cramer, *Pap.* t. 186. f. E, F.

*C. phlæas* of India.

This has a wide distribution in the N.W. Himalayas ; common in the outward ranges, Kussowlic, &c. ; appearing here and there, up to Upper Kunawur, in very various climates. It, however, disappears in certain gaps, as it were, which are occupied by *C. pavana*.

110. *CHRYSOPHANUS PAVANA*, Kollar in Hügel's Kashmir, iv. p. 416, t. 5. f. 5, 6.

*Hab.* N.W. Himalayas.

111. *CHRYSOPHANUS KASYAPA*, n. sp. (Pl. XXXI. fig. 10.)

*Male* bright coppery red, with purple reflexions : fore wing with the extreme edge of the costa and exterior margin black, the latter submarginally bordered with purple ; a black spot within discoidal cell, a second transversely closing the cell, four near the apex obliquely from the costa, and four others descending the disk : hind wing with the anterior and exterior margins black, bordered submarginally with purple, which latter colour also borders the anal margin ; a minute dot within discoidal cell, a narrow streak closing the cell, and a series of five discal spots black : body black. Underside metallic greyish blue, with greenish reflexion at base of hind wing ; fore wing with the black spots as above, also a short black

submarginal streak from posterior angle, between which and the discal spots the space is ferruginous; hind wing with a discal series of minute black dots: body and legs white; cilia white.

Expanse  $1\frac{2}{3}$  inch.

*Hab.* Lower Kunawur.

Very uncommon. It occurs in June, in richly wooded country, in Lower Kunawur, 7000 to 8000 feet altitude. The female is much darker brown.

112. *THECLA DERIA*, n. sp. (Pl. XXXI. fig. 11.)

Upperside purple-brown; hind wing with the exterior margin defined by a narrow black line; tail black; cilia grey. Underside dark greyish cream-colour; fore wing with a clear white transverse discal line, with black inner border, from before the apex, between which and exterior margin are two or more black spots; hind wing with a similar transverse discal white line, extending from anterior to inner margins, between which and a marginal white line is a series of more or less distinct black spots, and two ocellated black spots, one at anal angle, the other beyond, the space between which is grey; cilia greyish.

Expanse  $1\frac{1}{2}$  inch.

*Hab.* Upper Kunawur.

I but once caught two or three of this species, on the steep bare mountain-sides over the Spiti River, altitude 11,000 feet, on a hot fine day; they were flitting about the low shrubs.

113. *DIPSAS ODATA*, Hewitson.

*Dipsas odata*, Hewitson, *Illustr. of Diurnal Lep., Lycænidæ*, pt. 2, pl. 30. f. 13, 14.

*Male.* Upperside—basal half of both wings violet-blue; the outer half dark brown, paler on the posterior wing; cilia white. Underside grey white: fore wing with a pale linear spot closing the cell; two small dark-brown spots near the middle of inner margin; a transverse rufous band beyond the middle, bordered on both sides with white; a submarginal band of pale brown terminating near the anal angle in two large black spots: hind wing with a spot closing the cell; a central transverse rufous band and a submarginal brown band, both bordered with white; two lunular orange spots near the base of the tail, bordered above and below with black; the outer margin brown.

*Female* marked as in male, except that the whole of the hind wing is rufous brown.

Expanse  $1\frac{4}{10}$  inch.

*Hab.* Upper Kunawur.

This species I have caught in Upper Kunawur, in July and August, frequenting the orchards of the charming villages of that fine country, at altitudes of 8000 to 10,000 feet. They settle in great numbers on the walnut-trees; sometimes on neighbouring apricots and poplars. As one strikes the boughs, troops of these little black-



purple hair-streaks, with silvery-grey underside, flit about the thick foliage like a cloud of tortrices shaken out of an oak: they settle again at once. They fly about thus till very late.

114. *DIPSAS SYLA*.

*Thecla syla*, Kollar, H $\ddot{u}$ gel's Kaschmir, p. 414, t. 4. f. 7, 8.

*Hab.* N.W. Himalayas.

Observed in the same locality as *Dodona egeon*, flitting up and down the stream, pitching on moist rocks or pieces of wood in mid-stream.

115. *ILERDA ODA*, Hewitson, n. sp. (Pl. XXXI. fig. 12.)

*Ilerda oda*, Hewitson, Illust. of Diurnal Lep., Lycænidae, pt. 2, pl. 24. f. 9, 10.

*Male.* Upperside black; basal portion of both wings clear blue; hind wing with or without indistinct reddish streak at anal angle. Underside greenish saffron-yellow; fore wing with three decreasing black, white-bordered spots, ascending from posterior angle; hind wing with a broad ochrey-red marginal band, bordered on both sides with white black-bordered lunules: cilia black, slightly margined with white.

*Female.* Upperside blackish brown; fore wing with a short, sub-apical, medially oblique, broad red band, a distinct black spot closing the discoidal cell; hind wing with a broad, marginal, sinuous red band; cilia brown. Underside dull greenish yellow: fore wing with the medial portion reddish yellow; a short narrow blackish line sub-apically from costa, and a second elongated spot closing the discoidal cell; a black spot, with white inner border, at posterior angle: hind wing with a broad marginal red band, bordered inwardly with a linear series of white, and exteriorly with black lunules; an indistinct transverse discal dark line.

Expanse  $1\frac{1}{4}$  inch.

*Hab.* North of Simla.

Frequents rich deep forests north of Simla, occurring with *I. tamu* in sunny glades carpeted with strawberry-blossoms, in May.

116. *ILERDA TAMU*.

*Polyommatus tamu*, Kollar, H $\ddot{u}$ gel's Kaschmir, p. 417, t. 5. f. 7, 8.

*Hab.* North of Simla.

HESPERIDÆ.

117. *PAMPHILA DANNA*. (Pl. XXX. fig. 8.)

*Pyrgus danna*, Moore, Catal. Lep. Mus. E. I. C. i. p. 249.

Upperside dark greenish brown; fore wing with a narrow longitudinal streak within discoidal cell, terminating in two small spots ascending towards the costa, a small geminated spot before the apex, and three irregular-shaped spots obliquely on the disk pale yellow;



June 27, 1865.

Professor Huxley, F.R.S., V.P., in the Chair.

The following extracts were read from a letter addressed to the Secretary by Robert Swinhoe, Esq., H.B.M. Vice-Consul, Formosa, dated Takow, S.W. Formosa, 27th March, 1865 :—

“A friend of mine, who has been some time located in the river Yangtze, at Chinkiang, tells me that large herds of a Hog Deer are found periodically on an island in that river. These animals have coarse bristles and pig-like faces, with tusks. I have never seen the animal, but from his description should take it to be the *Hyelaphus porcinus*. It swims across to the island at the flooding of the great river, and when the water sinks is left isolated, owing to the high banks of the island. It then lurks about the bushes and high coarse grass. Parties of Europeans and Chinese then land on the island with fire-arms and make easy prey of the poor beasts, driving them from one end of the island to the other. Every season large numbers of them are thus slaughtered. They are rather coarse eating, but are said to make pretty fair venison when hung for some days. I have lately procured you a fine female of the *Cervus taiwanus*; it has gone on to Hongkong, and I trust will be thence forwarded all safe to you.

“I am sorry I cannot give you any particulars as to the whereabouts exactly of the pair of *Sus*\*, which I obtained for the Society in July 1862, and one of which reached you in safety. The person from whom I got the pair told me he purchased them off a boat in Dampier's Straits. This is all, I regret to say, I can tell you about their origin.”

The Secretary announced the safe arrival in the Society's Gardens, on the previous evening, of a young male African Elephant, received in exchange from the Jardin des Plantes, Paris.

Mr. G. F. Busk communicated a memoir upon the fossil Elephants of Malta, based upon collections formed in that island by Captain Spratt, R.N., which had been originally placed in the hands of the late Dr. Falconer for examination. Upon Dr. Falconer's decease, Mr. Busk had undertaken the task of identifying these remains, which he was induced to refer to three species of the genus *Elephas*. One of these, not much inferior in bulk to the existing Indian Elephant, was, as Dr. Busk believed, probably referable to *Elephas antiquus*. The two others were both of diminutive stature as compared with the existing species of Elephant, neither of them having exceeded 5 feet in height. To one of these, slightly the larger of the two, Mr. Busk proposed to restrict Dr. Falconer's name *Elephas melitensis*, and to call the other and smaller one after the lamented naturalist who had done so much towards increasing our knowledge

\* *Sus*, sp. 235 of 'List of Vertebrated Animals,' 1865, p. 37.

of these animals, *Elephas falconeri*. The two latter species were distinguished by very well-marked dental and other characters.

This paper will be published in full in the Society's 'Transactions.'

A paper was read by Professor Owen containing descriptions of new species of Indian Cetaceans, which had been observed and collected on the eastern coast of the Indian peninsula by Walter Elliot, Esq., F.Z.S. Of the seven species described as new, six belonged to the family *Delphinidæ*; the seventh was referred to the Sperm-Whales (*Physeteridæ*), and proposed to be called *Physeter (Euphysetes) simus*.

This paper will likewise be published in full in the Society's 'Transactions.'

The following papers were read:—

1. DESCRIPTION OF TWO SPECIES OF CHITONIDÆ, FROM THE COLLECTION OF W. HARPER PEASE, ESQ. BY PHILIP P. CARPENTER, B.A., PH.D.

CHITON (LOPHYRUS) PERVIRIDIS, Cpr.

*C. t. parva, angustiore, elevata, jugo acuto; colore intense prasinato; tota superficie sub lente minutissime squamuloso; areis diag. et valv. externis radiatim liratis, liris obtusis, parum conspicuis, lateraliter iv.-v., antice et postice xx.-xxv.; areis centr. sulcis distantibus, jugo parallelis, circ. xii., parum impressis; mucrone antice subcentrali, satis conspicuo: intus laminis insertionis valv. term. viii.-xi., centr. unifissatis; dentibus acutioribus, alte pectinatis, subgrundis curtis; sinu latiore, planato, ad jugum dentato: pallio squamis magnis, solidis, imbricatis sed striatis instructo.*

Long. .45, lat. .25, alt. .12 poll.

*Hab.* Central Pacific (Pease) (no. 299).

A solitary specimen of this interesting species is very like *C. virescens*, Rve.\*, in general appearance; but the mantle of that species is nearly smooth, and the valves scarcely sculptured. This shell is of a uniform bright green. It has the aspect of *Lepidopleurus*; but the insertion-plates, though sharp, are deeply pectinated. It differs from most other Chitons in having the scales distinctly striated, as in *C. striatosquamosus*, Maz. Cat. no. 250.

ACANTHOPLEURA NIGROPUNCTATA, n. s.

*A. t. parva, satis elongata, olivaceo et fusco eleganter nebulosa; satis fornicata, jugo obtuso; areis later. satis definitis, rugis radiantibus et longitudinalibus irregulariter decussantibus ornatis, inter quas punctula nigra subradiatim sparguntur; ar. centr. rugis subparallelis, subdecussatis, vix regularibus, ad*

\* Four out of the five specimens in Mus. Cuming. have a brown-marbled anterior valve, with brown dots along the sutures.